

A miniaturized UV/VIS/IR hyperspectral radiometer for autonomous airborne and underwater imaging spectroscopy of coastal and oceanic environments, Phase I

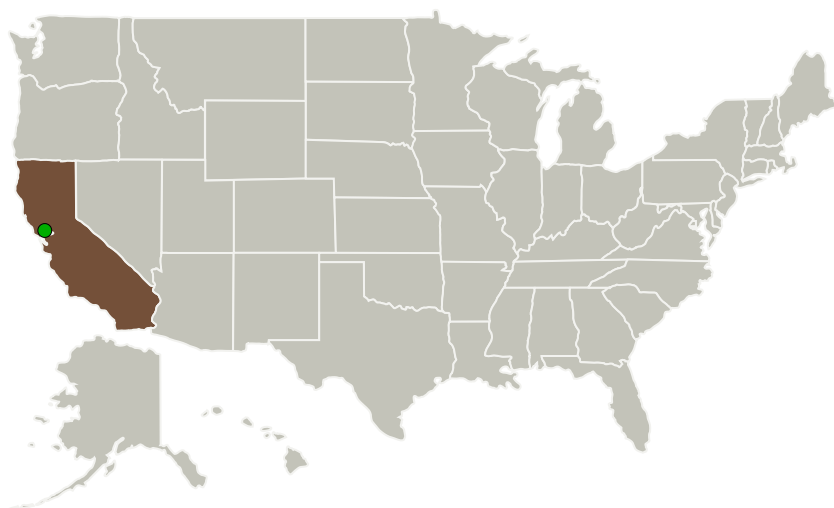
Completed Technology Project (2010 - 2010)



Project Introduction

Remote sensing of optical properties of oceans and coastal waters provides essential information for various scientific questions and applications, including monitoring biological biomass and productivity, biogeochemical cycling of carbon, pollution, and ecosystem health. OKSI, with the Scripps Institution of Oceanography (SIO), propose the development of novel instrumentation package that will measure in both airborne and submersible applications the upwelling and downwelling radiative fluxes in the UV-VIS-NIR range with high spectral resolution. In Phase I science requirements will be defined and translated into engineering requirements, and the design of an existing hyperspectral sensor modified to (1) simultaneously measure both the upwelling (in pushbroom imaging mode) and the downwelling (non-imaging) spectra, and (2) extend the spectral range to the UV. In Phase-II the prototype instruments will be built and flown on a SIO Unmanned Aerial Vehicle and tested in an SIO submersible system. Ocean color satellite data currently provides information at low spectral resolution (several discrete wavebands) and relatively low spatial resolution (~ 1 km). The proposed instrumentation package will fill a major gap in science capabilities by providing hyperspectral data with sufficiently high spatial resolution necessary for improved retrievals of information about in-water constituents/properties in highly dynamic coastal environments. The project outcome at the end of Phase-II will be at TRL 6.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Opto-Knowledge Systems, Inc.(OKSI)	Lead Organization	Industry	Torrance, California
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations

California

Project Transitions

▶ **January 2010:** Project Start

✓ **July 2010:** Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/139916>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Opto-Knowledge Systems, Inc. (OKSI)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

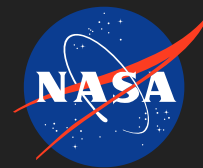
Program Manager:

Carlos Torrez

Principal Investigator:

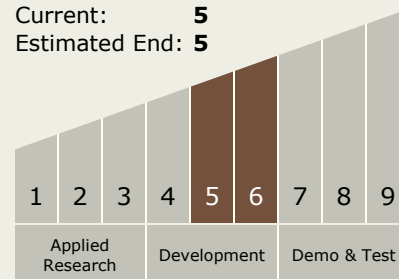
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Technology Maturity (TRL)

Start: 6
Current: 5
Estimated End: 5



Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.1 Detectors and Focal Planes

Target Destinations

Earth, Others Inside the Solar System